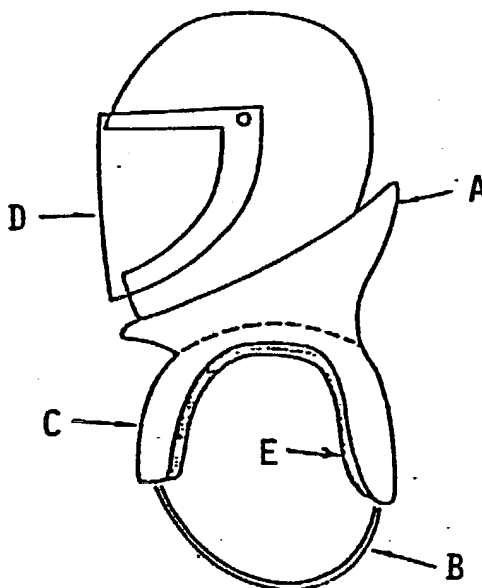




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(54) Title: EXTRA SAFETY CRASH HELMET



(57) Abstract

Extra safety crash helmet for sportspersons including rally, racing, speedboat drivers, motorcycle, bicycle, horse riders and the like, comprises a light weight combination crash helmet and an articulated shoulder mount, that transfers the impact of an accident away from the head - neck - spine line and onto the shoulders. The design also allows freedom of head movement and vision and eliminates the chin strap of conventional crash helmets.

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Description EXTRA SAFETY CRASH HELMET

According to the invention there is provided an article of head, neck and shoulder protection for sportspersons, comprising:

An impact resistant crash helmet lined with shock-absorbing material such as
5 foam rubber, with an innermost fabric lining such as cotton. At rear centre neck-level a curved steel plate is attached between the outer shell and said foam rubber lining. The said steel plate either including two drilled holes each housing one end of a double-headed pin, or having two pins incorporated into the said steel plate as a one-piece moulding, either method articulating the said
10 helmet to a shoulder mount; one pin on either side of the longitudinal centre of the plate. The outer shell of the said helmet including adjacent holes through which the said pins are located.

A shoulder mount made of the same material as the said crash helmet and lined in the same way where it is in contact with the shoulders. The shoulder
15 mount moulded to fit around the neck and over the shoulders and fit down the chest and back, almost to the level of the armpits, and allowing free movement of the arms. At upper rear centre neck-level, adjacent to the said steel plate built into the helmet component, a curved steel plate including two movement restricting sockets each housing the other end of one of the said pins
20 articulating the said shoulder mount to the said helmet. The said pins having an outer roller casing to allow free movement within the said sockets. An articulated joint formed in this way allows the wearer's head to turn either vertically, horizontally, or diagonally, but in the case of accident the said sockets restrict the degree to which the built-in pins allow the head to be
25 pushed, to within safe limits.

The curve of the said shoulder mount would create a cooling effect by channelling air from the front collar around the back of the neck.

Two nylon or leather straps attached to the lower part of the said shoulder mount at back left and back right respectively, fitted under the armpits and secured on the chest by a buckle, heavy-duty press stud or similar quick release device. Fastening in this manner allows the invention to rest on the shoulders thereby taking most of the weight from the head, and eliminating the need for the conventional chin strap.

A clear or tinted plastic visor attached to said crash helmet by studs allowing said visor to be lifted upwards.

An embodiment of the invention, and possible variations on that embodiment, will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a part-sectional view of the crash helmet component only of the "Extra Safety Crash Helmet".

Figure 2 is a rear view of the "Extra Safety Crash Helmet" representing the method of articulation of the crash helmet and shoulder mount components.

Figure 3 is a side view of the "Extra Safety Crash Helmet".

Figure 4 is a simplified front view of the "Extra Safety Crash Helmet".

Figure 5 provides a side view and a sectional view of a double-headed pin for articulating the crash helmet and shoulder mount components of the device.

Figures 6 and 7 are simplified side views representing potential up and down and sideways tilting movements of the device.

Figures 8 and 9 are simplified part sections of a side view showing the point and method of articulation of top and bottom components of the device.

Figure 10 represents a curved steel plate built into the shoulder mount component of the device, with eight-armed-star-shaped movement restricting sockets.

Figure 11 is a side view of a different possible embodiment of the crash helmet component representing a more closed-face style.

Figure 12 is a side view of another possible embodiment of the crash helmet component representing a more open-face style.

The embodiment of the "Extra Safety Crash Helmet" represented in figures 1 through 10 is a combination crash helmet and articulated shoulder mount,

5 described from top to bottom as follows:

The outer layer of the helmet component (Figure 1.A) would be made of an impact resistant material such as Kevlar, fibreglass or similar substance; it would be approximately 1/4 inch thick. The said helmet would be fully lined with either soft rubber or foam rubber or similar soft material (Figure 1.B); this
10 lining would be approximately 1/2 inch thick. The innermost lining (Figure 1.C) would be a smooth cotton or elastic or similar material.

At rear centre neck-level a curved steel plate is attached between the outer shell layer and the rubber lining layer (Figure 1.D), contoured to the mould of the helmet. The steel plate would be approximately 7 inches long and 3 inches
15 wide and 1/4 inch thick. The said steel plate including two holes, one drilled 1 1/4 inches either side of the longitudinal central axis of the plate; each hole 3/8 inch diameter. The outer layer of the said helmet including two adjacent holes also of 3/8 inch diameter (Figure 2).

Located through each of the holes in the said steel plate and also through the
20 said holes in the outer layer of the said helmet, a double-headed pin, approximately 3/8 inch diameter including an outer roller casing on the shaft, 1 1/2 inches long (Figure 5). These pins being the method of joining and articulating the said helmet to a shoulder mount (Figure 2).

A shoulder mount (Figure 4.A) made of the same material as the said crash
25 helmet and lined in the same way where it is in contact with the shoulders (Figure 3.E). The shoulder mount moulded to fit around the neck and over the shoulders and fit down the chest and back, almost to the level of the armpits,

approximately 9 inches from top of shoulders, and allowing free movement of the arms.

At upper rear centre neck-level of the shoulder mount, adjacent to the said steel plate built into the helmet component, a curved steel plate including two
5 eight-armed-star-shaped movement restricting sockets (Figure 10) each housing the other end of one of the said double-headed pins articulating the top (helmet) and bottom (shoulder mount) components of the invention (Figures 8 and 9). The said curved steel plate would be approximately 9 inches long and 3 1/2 inches wide and 1/4 inch thick. Limited movement of the said pins within
10 the star-shaped sockets is allowed, thus facilitating head movement but restricting it to safe limits in the event of an accident.

As the said pins both join and articulate the top (helmet) and bottom (shoulder mount) components, the "Extra Safety Crash Helmet" is a non-detachable, one-piece invention. As mentioned, in the event of an accident, the sockets limit the
15 amount of movement of the pins, the helmet, and the head to safe limits, as follows:

When the pins are moving horizontally in the eight-armed-star-shaped sockets, the head is able to turn left or right approximately 80 degrees either way from centre (Figure 4.B).

20 Vertical head movement is facilitated to approximately 40 degrees either way from the horizontal plane (Figure 6).

Tilting of the head is facilitated either way to approximately 40 degrees (Figure 7).

Similarly, the articulated pin-socket connection would only allow the head to be
25 pushed upwards, downwards or sideways to the degrees stated above.

The said helmet is secured on the wearer by two leather or nylon straps attached inside the shoulder mount where it fits over the shoulders at back left and back right respectively (Figure 3.B and Figure 4). Said straps are fitted

under the armpits and secured on the chest by a buckle, heavy-duty press stud or similar quick-release device.

The preferred embodiment of the helmet would have a clear or tinted plastic visor attached by studs allowing said visor to be lifted upwards (Figure 3.D).

Claim EXTRA SAFETY CRASH HELMET

The claims defining the invention are as follows:-

1 An article of head, neck and shoulder protection for sportspersons, comprising:

- 5 An impact resistant crash helmet component lined with shock absorbing lining, with an innermost fabric lining; said helmet including at rear centre neck-level a curved steel plate between the outer shell and the shock-absorbing lining, housing two pins either moulded into, or located through drilled holes in, said plate, one pin either side of longitudinal
- 10 centre for attaching and articulating said helmet to a shoulder mount component; said pins having an outer roller casing; the outer shell of the said helmet including adjacent holes through which the said pins are located; said shoulder mount component made of the same material and lined in the same way as the helmet and moulded to fit around the neck
- 15 and over the shoulders and fit down the chest and back almost to the level of the armpits but allowing free movement of the arms; said shoulder mount also including a curved steel plate, adjacent to the aforesaid steel plate in the helmet component, housing two movement-restricting sockets one on either side of longitudinal centre, each
- 20 housing one of the aforesaid pins each secured by its head thereby articulating and attaching the said helmet and the said shoulder mount components; an articulated joint formed in this way allows the wearer's head to turn either vertically, horizontally, or diagonally, but in the case of accident the said sockets restrict the degree to which the built-in pins
- 25 allow the head to be pushed, to within safe limits; the device secured on the wearer by two nylon or leather straps attached to the lower part of the said shoulder mount at back left and back right respectively, fitted under the armpits and secured on the chest by a buckle, heavy-duty

press stud or similar quick release device; fastening in this manner allows the invention to rest on the shoulders thereby taking most of the weight from the head, and eliminating the need for the conventional chin strap.

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FIG 1

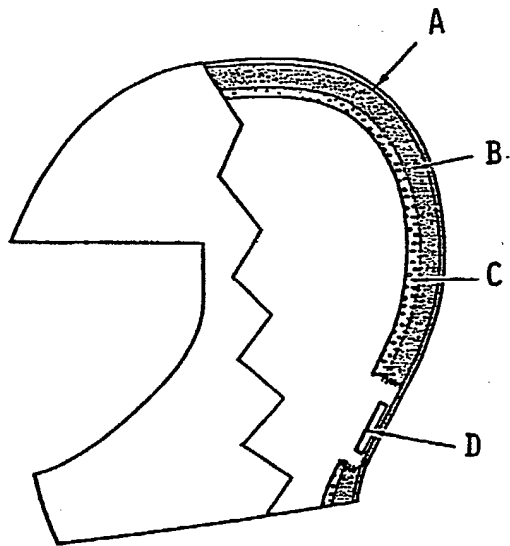


FIG 2

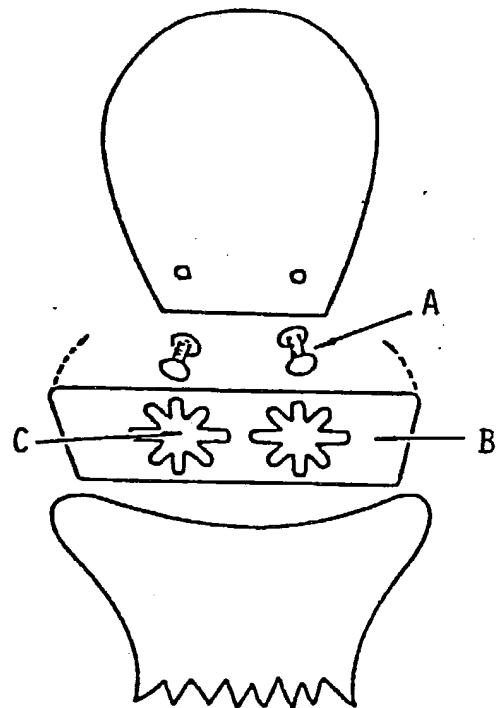


FIG 3

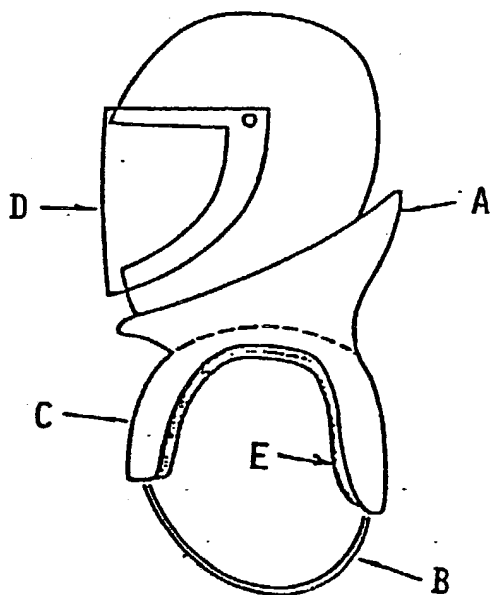
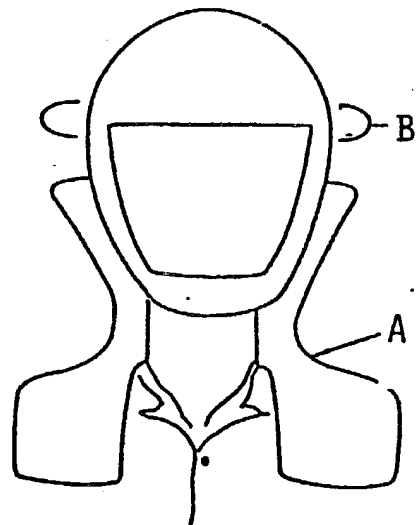
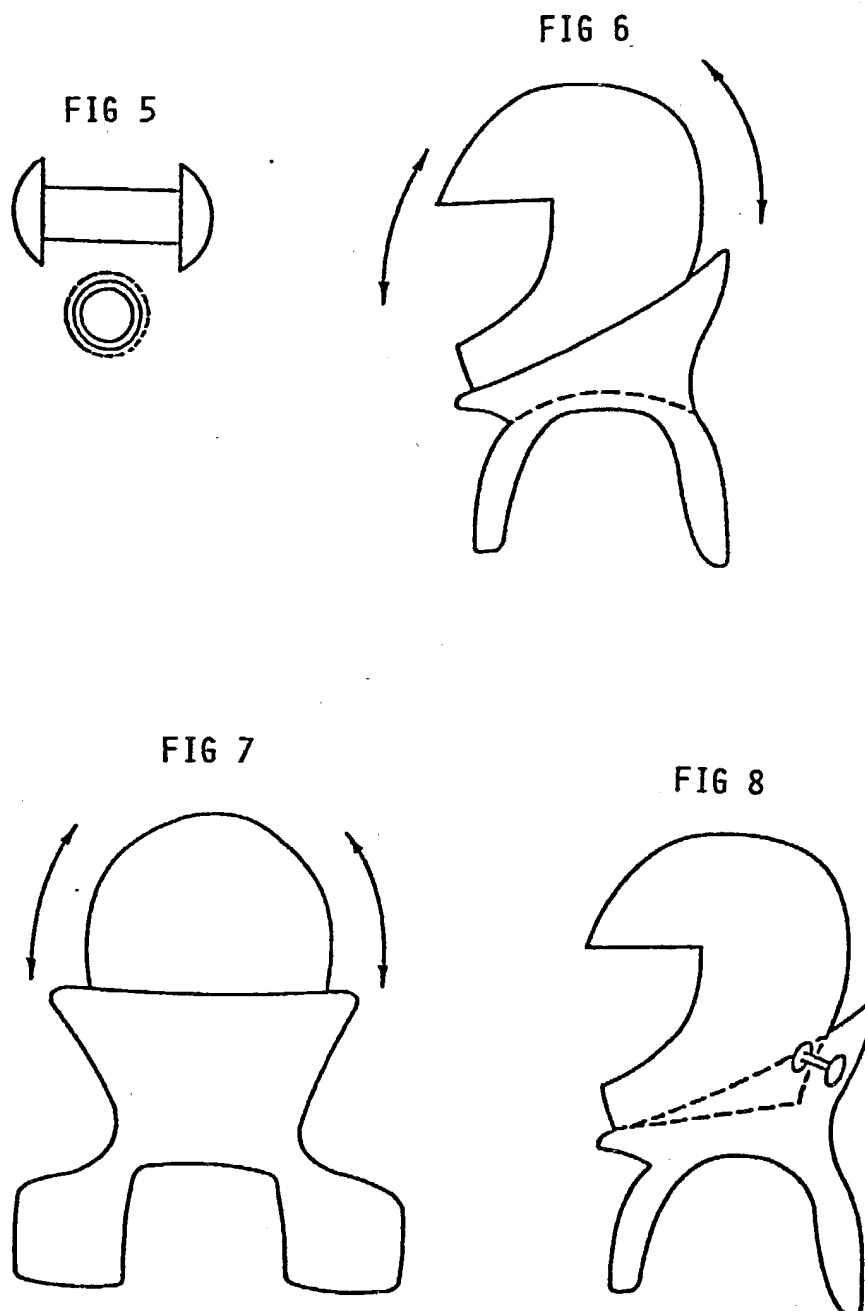


FIG 4



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FIG 9

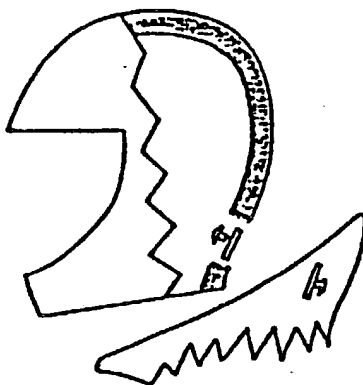


FIG 10

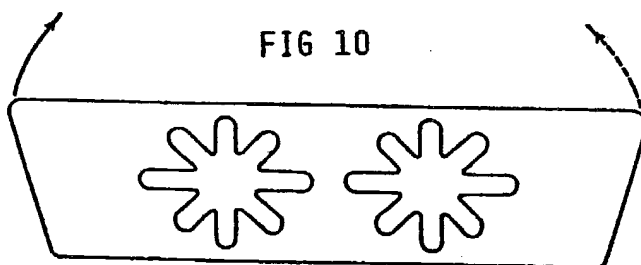


FIG 11

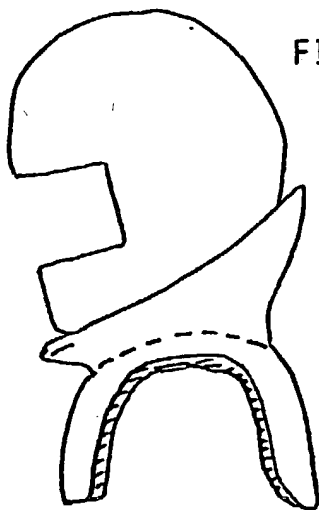
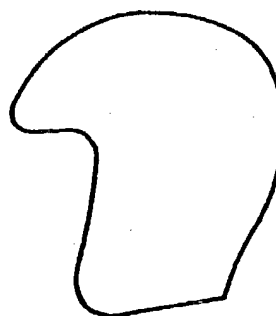
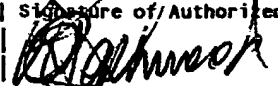


FIG 12



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According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. Cl. ⁵ A42B 3/00, 3/04, 3/06		
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III. DOCUMENTS CONSIDERED TO BE RELEVANT 9		
Category*	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages 12	Relevant to Claim No 13
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A	US,A, 4638510 (HUBBARD) 27 January 1987 (27.01.87)	(1)
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IV. CERTIFICATION		
Date of the Actual Completion of the International Search 29 November 1990 (29.11.90)		Date of Mailing of this International Search Report 10 December 1990
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